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Hello and welcome to the newsletter of the Delta Institute of Natural History. As the first email from the Delta Institute since its move to the new location (and first email in many years), I am going to fill you in on my e-marketing plans. Friends, I'm aware that you receive a lot of emails and that your time is as valuable as mine. Therefore, I want you to be aware that I plan to email you about newsletters on an infrequent basis. Your email address will not be shared with anyone unless you request it (i.e., I aim to be a good steward of your private information). Most importantly, I will make sure that the newsletters are useful to you by presenting information that you can use to boost your family's health, self-reliance, and connection to the landscape. I wish for you to have the peace of mind that comes with the knowledge possessed by wild humans. I'm always interested in your feedback and if you have topics you would like to see covered, please contact me with suggestions.

While sending you these newsletters, I'm going to make one of the big mistakes in web marketing—I'm going to provide pages of text. Instead of just a catchy paragraph, I want to give you real information. Therefore, it requires you to read more words than can be accomplished in six seconds. I assume that those serious about health will take the time to look over several pages of writing and come back to it now and again as necessary to finish reading the piece. I apologize for the length of my newsletters, but human health is a complicated topic that can't be crammed into a few sentences.

## **Preventing and Treating Staph Infections**

### **Part One**

I get a lot of requests for dealing with staph infections. This organism is responsible for a host of different infections (see below), some of which can compromise the health of extremities and limbs and, in some cases, threaten the life of the person. Most people are asking me specifically how to treat an infection using wild or cultivated plants. This is an important question, and the answer to it provides a confident means of treatment that does not harm the person. However, we are generally indoctrinated (without knowing it) into a medical paradigm that causes us to

focus on symptoms (and their relief) rather than the underlying cause. Therefore, I have decided to break this article into two parts, the first of which will cover how to armor yourself against staph infections (and other infectious agents), the second of which will treat what to do if you succumb to one.

Some of you may know that I practice a martial art called Brazilian jiu-jitsu. This is a close-quarters, ground-fighting art that can be described as submission wrestling. Needless to say, people who practice this art are in close contact with their training partners, and this allows for the transmission of pathogenic bacteria and fungi. I used to succumb to several staph infections a year. Some of these were serious and caused a lot of discomfort and temporary loss of mobility. It did at least give me many opportunities to work on natural treatments using wild and cultivated plants. Of potential interest to you is that I was able to learn deficiencies in my diet and make corrections. It has been years since I have had a staph infection (or a cold, flu, etc.).

The organism responsible for staph is a bacterium (*Staphylococcus aureus*) that commonly lives on the skin and in the nose of humans. It is always present and requires a suppressed immune system to overwhelm the body's defenses and become problematic. Staph can cause skin rashes (impetigo), skin infections (boils), joint pain (septic arthritis), heart problems (infective endocarditis), respiratory problems (pneumonia), and several other health issues. Creating a strong defense against this organism requires a powerful and vital immune system. Our immune system is powered primarily by what we eat (though other factors are important too).

It is critical that you understand that frequent or recurring infections (including colds and flus) are an indication your diet is insufficient for the challenges you face. Equally critical, if you visit a doctor's office for these problems, in most cases, you will be prescribed a medication to kill the pathogen, but no attention will be given to the underlying problem (weak immune system). Further, the medication provided will not selectively kill pathogenic bacteria; it kills all bacteria, including those that are beneficial and necessary to your health (e.g., gastrointestinal flora). This further compromises the health of your body and the functioning of your immune system, which makes you more susceptible to another infection, requiring another doctor visit, and the process goes on.

Diet is an often poorly understood aspect of human living that can be very contentious. Many people have committed significant time and resources to practicing a certain life style (which includes the foods they eat) and respond poorly to information that is contrary to what they have learned. Please understand that the information provided here is not intended to offend anyone. I present it with evidence from archeology, ethnography (i.e., study of primitive diets), and a host of modern research. My lens for viewing human nutrition comes from an understanding of what the natural human diet is (or more importantly, was).

The following are strategies for bolstering the function of your immune system. There are many more, but these are some of the important factors that can make a huge difference in your body's defenses.

## **Vitamin A**

This vitamin is known to enhance the functioning of the immune system and protect various parts of the body from infections (including viral and bacterial types). Given that this vitamin is also an antioxidant, it also helps quench free-radicle damage (i.e., it aids in the prevention of cancer). There are basically two sources of vitamin A: animal foods and plant foods. Both are beneficial, but plant sources (the carotenoids) are not as powerful as animal sources because plant sources must be converted in the body to the active forms of vitamin A (such as retinol and retinal), the forms found in animal foods. Further, the conversion of carotenoids is not perfect (in the elderly and sick, the conversion occurs at a poor efficiency). The average conversion efficiency has been calculated at only 9–22%. Note that a low-fat diet hampers conversion because dietary fats are necessary for this process. To summarize this (and it is important you understand this)—plants don't contain Vitamin A, rather they contain a precursor (pro-vitamin A) that isn't perfectly translated to active Vitamin A. Traditional diets received approximately 10 times the Vitamin A that our current diet does. They did this by following dietary wisdom (as opposed to following many “health experts” who recommend avoiding some of the best Vitamin A-rich foods). In the context of our topic at hand (staph infections), it is noteworthy that antibiotic medicines interfere with Vitamin A absorption (keeping the body primed for additional infections). Good sources of Vitamin A include liver (and other organ meats), marine oils, fish, shellfish, eggs of properly raised birds, and butter from properly raised animals. Know that the body stores Vitamin A in the liver; therefore, this is one of the best sources of this vitamin. Though this organ from some animals has a strong flavor, it can be covered through blending with other foods. Some of our favorite dishes include pâté and a meatloaf that incorporates organ meats. I realize this may sound offensive to some of the readers, but your ancestors ate all of these foods and enjoyed wonderful health as a result.

## **Vitamin D**

This is the most important part of this newsletter. Almost anyone reading this is deficient in Vitamin D. This opens you up to a host of problems, including diabetes, hyperactivity, schizophrenia, bone disorders, cancer, and infections (there is a very long list that could be provided here). Vitamin D (actually a hormone) can be acquired in two manners: diet and lifestyle. By the latter method, Vitamin D is manufactured in the body out of cholesterol by the action of sunlight on the skin. However, there are many things that interfere with this. If you excessively protect yourself from the sun, you cannot manufacture Vitamin D. We are told by medical professionals that sunlight causes skin cancer. Though this topic is too big to be covered here, know that this notion is seriously flawed (true that it can in people with nutrient-poor diets, especially those low in Vitamin D and polyphenols). Avoiding the sun is tantamount to avoiding fresh air, exercise, and nutritious food (would you believe a medical professional if they told you to avoid these health-giving items?). Also realize that if you frequently wash your entire body with soap, you also reduce your body's ability to produce Vitamin D because our skin's oil (sebum) is, at least in part, necessary for Vitamin D production (and soap washes this away). In other words, excessive personal hygiene contributes to a Vitamin D deficiency. Diet is important for acquiring the appropriate amount of Vitamin D, especially in northern latitudes where winter season both diminishes the intensity of sunlight and necessitates clothing that hides the skin's surface from the sun. Very few foods actually supply ample amounts of this nutrient in a form that is bioavailable. Marine oils (e.g., cod liver oil), liver, butter from grass-fed cows, free-range eggs (duck better than chicken), and seafood (e.g., shrimp, crab) are some of the best sources.

Plants are, unfortunately, poor sources of this vitamin. Sun-dried mushrooms can be good sources of Vitamin D<sub>2</sub>, but this version is not as bioactive as D<sub>3</sub> (the form made by sunlight and found, in part, in animal foods).

So why focus on Vitamin D? Many reasons; I'll provide a few compelling ones. First, the US RDA (recommended dietary allowance) for this nutrient falls horribly short of the levels needed for health. For middle-aged adults, only 600 International Units (IUs) are recommended. Independent studies show 4000 to 8000 IUs promote health (in line with the results of Weston Price's observations of primitive diets). Second, Vitamin D up-regulates the production of an antimicrobial compound in the skin, helping prevent infectious bacteria and fungi from establishing themselves. This antimicrobial peptide (called cathelicidin) is known to be directly active against *Staphylococcus aureus*, including Methicillin-resistant forms (MRSA). Third, Vitamin D assists with other health issues that result from poor immune system function, such as cancer. And fourth, Vitamin D is also an antioxidant, so it helps protect the body from a host of insults (again, including those that can lead to cancer). The single most important thing you can do for your diet is realize the importance of Vitamin D and bolster your levels through food (not supplements, they supply a different form that is not as bioactive).

### **Omega-3 fatty acids**

Omega-3 fatty acids are crucial lipids to acquire in the diet because they cannot be manufactured by the body. This is also true of the related omega-6 fatty acids. Both of these fats belong to a group of lipids called polyunsaturated fatty acids, which are liquid at room temperature. Unfortunately, contemporary diets (especially vegetarian ones) receive too high a proportion of omega-6 fatty acids, found in abundance in grains, nuts, seed-like fruits, and legumes (including oils made from these foods, such as corn oil, soy oil, sunflower oil, and safflower oil). Too much omega-6 fatty acids in the diet exacerbate many health problems, including immune system function. Know that hunter-gatherer diets ingested these two fats in a ratio of approximately 2:1 omega-6 to omega-3. The average American diet takes in these lipids in a ratio of approximately 10:1 to 20:1 (vegetarian diets can be even higher, 24:1 has been reported in the literature). Omega-6 fatty acids suppress immune function and promote inflammation when consumed in these ratios, leading to cardiovascular disease, neurological diseases, arthritis, asthma, and many other chronic (i.e., preventable) issues. Omega-3 fatty acids promote immune system function and suppress inflammation when ingested in appropriate amounts. Omega-3 fatty acids can be acquired from plants and animals. Again, like with Vitamin A, the plant forms are different from the animal forms. Plants provide primarily alpha-linolenic acid (ALA). It is the leafy shoots and small seeds within fleshy fruits (e.g., blueberries, raspberries) that, on average, contain the highest amounts of ALA. Animals provide longer-chain forms of these lipids: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA, this one is also made in smaller amounts by some algae). All of these forms are important for health, but the longer-chain forms are crucial for proper functioning of the immune system. In the body, ALA can be converted to EPA and then to DHA, but the conversion of ALA to longer-chain forms occurs at a poor efficiency (especially in men, where it is generally below 5%). Therefore, it is important to eat a balanced diet (i.e., one that derives food from all the major food kingdoms, including animals). Good sources of ALA include wild shoots and greens and many fleshy fruits with small seeds (i.e., fleshy fruits where the seeds are eaten). The fruits of chia (*Salvia hispanica*) are excellent and purchasable sources of plant-based omega-3 and are superior in some ways to

other well-known plant sources (e.g., flax seeds). Good sources of EPA and DHA include fish (especially oily types) and shellfish, though it also occurs in many wild mammals, especially those that consume leaves, shoots, grasses, and the like as a large part of their diet (this also translates to domesticated animals: pastured animals are better for you than cage-reared, grain-fed animals). If you are unable to hunt and gather wild foods, know that how the animal was raised is vital for its omega-3 fatty acid content. For example, free-range chickens that are provided fresh pasture to consume plants and insects can have an omega-6 to omega-3 ratio of approximately 1:1. In comparison, chickens raised in cages and fed grain have a very poor ratio, as disturbed as 19:1. And if you purchase organic eggs that are fed “vegetarian” feed, this means they get lots of grain (high in omega-6 fatty acids) and as a result have poor fatty acid profiles (note: chickens aren’t meant to be vegetarians).

### **Polyphenols**

These water-soluble phytochemicals are well-known to many who study nutrition. They are touted (with good reason) for their antioxidant ability. However, polyphenols do much more than quench free radicals in the body, they also act as anti-inflammatories and boost the function of the immune system (through several mechanisms, including improvement of the functioning of T-cells). Polyphenols are not found in animals, they must be acquired from plants. Most importantly, every study I’ve seen that compares wild plants with similar domesticated plants shows that wild plants contain more polyphenols. Why? One reason is that certain polyphenols are part of the defensive system of plants and help them repel various pathogens and herbivores. Wild plants must fend for themselves; therefore, they produce more defensive compounds than cultivated species that are cared for (or sprayed) by humans. Another reason is that plant breeding to produce our domesticated plants (which is a form of genetic modification) sought to, among other things, improve the flavor and reduce the bitterness of many fruits and vegetables. Bitter is one of the five tastes and serves the function of identifying antioxidant ability (much in the same way that sweet serves to identify the presence of sugars). Therefore, always seek out wild plants for food when your landscape and schedule allow. If you do consume mainly domesticated plants, buy organically raised versions and seek out those that are closer in form to their wild progenitors (this demonstrates less genetic modification and less loss of beneficial phytochemicals). Some good wild sources of polyphenols that you may not have heard of include: black chokeberry (*Aronia melanocarpa*), black crowberry (*Empetrum nigrum*), and the inner bark of eastern white pine (*Pinus strobus*).

### **Fungal extracts**

Fungal extracts include decoctions (hot water teas) and tinctures (alcohol soaking) and the combination of these methods (double extractions). I gather mine from the wild, usually focusing on the fruiting bodies or sclerotium of hemlock reishi (*Ganoderma tsugae*), chaga (*Inonotus obliquus*), and turkeytail (*Trametes versicolor*). These are well known for their immune modulating activity and are also anti-inflammatory, antineoplastic, and antioxidant. Though they have many mycochemicals that boost immune system function, it is the beta-glucans, a type of carbohydrate, that have received much of the research attention. These compounds enhance many facets of the immune response and can be an important aspect of keeping the immune system in good working order (especially in the face of modern day stressors). For example, research shows that glucans stimulate the activity of Natural Killer Cells (these act directly against tumor cells and assist in suppressing viral replication), activate

macrophages, induce maturation of T-cells, and stimulate B-Cell activation. Because beta-glucans are bound to proteins, usually heat is needed to separate these carbohydrate-protein complexes (this is important if you are preparing your own extracts or purchasing extracts). Also, some of the mycochemicals are best dissolved in alcohol (i.e., they are poorly water soluble); therefore, double extractions have a wider range of activity than water or alcohol extracts alone. For example, the antiviral components are not found in water-only preparations (if you would like to learn to make your own double extractions, see the 2012 schedule at [www.arthurhaines.com/learn.html](http://www.arthurhaines.com/learn.html), we will be making this form of medicine in the Fall Foraging class). Given the safety of fungal medicines and their broad range of therapeutic benefit, I recommend their use on a frequent basis.

You may be aware of glaring errors from the list (e.g., Vitamin C, various minerals such as zinc and selenium). Also, some animal foods, like colostrum, can help reinvigorate the immune system, especially after years of poor diet. Unfortunately, I can't cover all of them and expect you to read the entire newsletter. Therefore, please forgive the condensed treatment. I also want to reiterate that I'm not trying to attack anyone's diet and lifestyle. All dietary choices have consequences. I'm simply presenting the information from the lens of wild food and indigenous diets. Following are items you must find ways to avoid, as they are known to suppress the functioning of the immune system: refined carbohydrates, food additives (e.g., preservatives, coloring), and oxidized fats (e.g., vegetable oils used in pan-frying and deep-frying, many types of cold cereal). Remember that organically-grown whole grains and seed-like fruits can be nutritious, but if you eat lots of bread, pasta, rice, quinoa, amaranth, lentils, beans, almonds, and most nuts, you are taking in large amounts of omega-6 fatty acids and little omega-3 fatty acids (poor balance leads to suppressed immune function). Dietary diversity promotes health.

Additional Resources:

See my youtube channel: <http://www.youtube.com/user/arthurhaines?feature=mhee>

Look at the list of classes, lectures, and programs: <http://www.arthurhaines.com/learn.html>

Purchase foraging books: [http://www.arthurhaines.com/ancestral\\_plants.html](http://www.arthurhaines.com/ancestral_plants.html)

Arrange for classes or consultation: email me at [arthurhaines\[at\]wildblue.net](mailto:arthurhaines[at]wildblue.net)

Please know that I'm doing fewer scheduled classes these days and more privately arranged events and mentoring, just contact me for details and we can develop a curriculum that works for you.